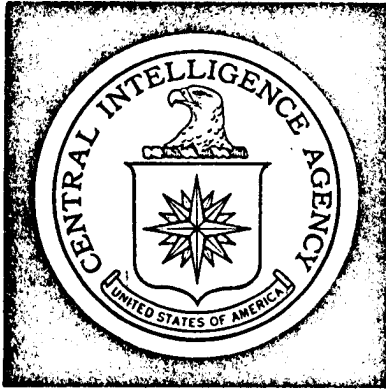


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DIRECTORATE OF
INTELLIGENCE

WEEKLY SUMMARY

Special Report

Constraints on the Soviet Oil Position 1970-80

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CONSTRAINTS ON THE SOVIET OIL POSITION, 1970-80

Since the mid-1950s the USSR has been a substantial net exporter of oil. In recent years, oil sales have been the country's largest single source of hard currency. In 1969, however, the Minister of the Petroleum Extraction Industry, V.D. Shashin, declared that total Soviet exports of oil will not increase significantly in the future because domestic demand will rise faster than production. He also said that the USSR will maintain a high level of exports to Eastern Europe but expressed doubt that exports to the West will show much further increase. Shashin's predictions may well err on the side of optimism. Analysis confirms the suggestion that during the 1970s Soviet consumption of oil is likely to increase faster than production. By 1980 there still will be an excess of production over domestic consumption, but the excess will be less than the import requirements of Eastern Europe. The USSR already has begun procuring small quantities of Middle Eastern and North African oil under barter agreements for re-export to other Communist countries. Encouraged by the Soviets, the East European states also have been bartering directly for Middle Eastern oil. The Soviets probably hope that oil obtained in this manner will permit them to maintain oil sales in hard currency markets at current levels.

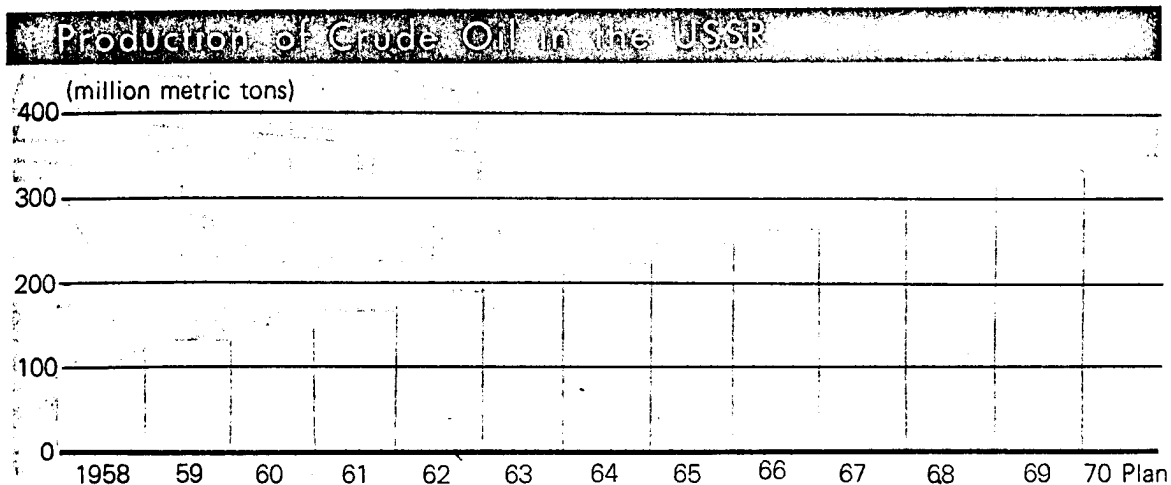
Production

The USSR has emerged as a major oil producing nation only in the last two decades. Soviet crude oil production, which rose from 37.9 million metric tons in 1950 to 147.9 million in 1960, should reach 350 million this year. Thanks to this upsurge, the Soviet Union now is second only to the United States in crude oil output. The rate of increase has declined, however, from almost 16 percent per year during 1956-60 to a less spectacular but still rapid rate of nearly eight percent annually.

During the post-1950 expansion of oil production, Azerbaydzhan—where fields had been producing since tsarist times—was eclipsed as the principal Soviet source of oil by the prolific Urals-Volga region. Although production in the North Caucasus, West Siberia, and Central Asia subsequently increased considerably, the Urals-Volga region still accounted for some 60 percent of national output as recently as last year.

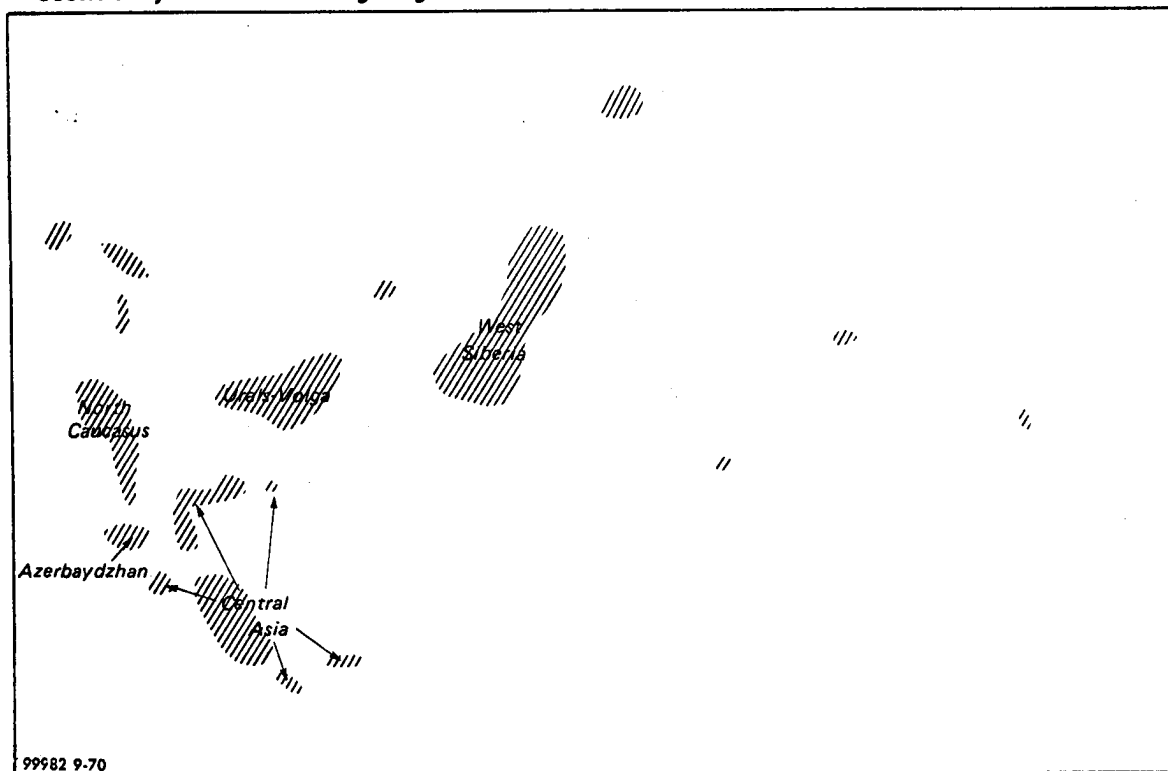
Soviet authorities originally predicted that the Urals-Volga fields alone would be yielding 350 million tons of oil a year by 1980, but they

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USSR: Major Oil Producing Regions

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now indicate that annual production there will be at its peak this year at about 207 million tons. The amount of oil that ultimately can be recovered from this region has been reduced by extraction at excessive rates and by faulty use of water injection to maintain reservoir pressure. Injected water has encroached on producing oil zones and has isolated sizable pockets of oil, rendering them unrecoverable.

Costly blunders have not been confined to the Urals-Volga region, but have occurred in practically all oil producing areas. In addition to excessively rapid extraction and faulty water injection, a common mistake has been large-scale burning off of the natural gas found in association with oil. The gas should be recycled into the deposits to maintain pressure and utilized after the extraction of oil has been completed. In the important fields of western Kazakhstan, associated gas was burned off instead of being recycled. Then cold sea water was injected in an attempt to restore pressure, and much of the oil, which is high in paraffin content, solidified. As a result, production targets have had to be cut drastically.

Obstacles

Under constant urging to maximize short-run achievements, Soviet oil technicians have worked feverishly with poor equipment and obsolete technology. The geophysical instruments they use to map geological structures are generally outdated. In seismograph technology, which is used in the exploration of deep, complex geological formations, the USSR is seven to ten years behind the US. The Soviets continue to rely on turbodrills for as much as 80 percent of all operations, both for shallow and deep drilling. The transition to greater reliance on rotary drilling, best suited for deeper drilling, is impeded by a shortage of high-quality drill pipe. Soviet deep-drilling capability also is limited by a shortage of high-powered mud pumps and high quality drill bits. Burdened with their many handicaps, Soviet

drillers require eight to ten months to drill wells that American crews could sink in a single month.

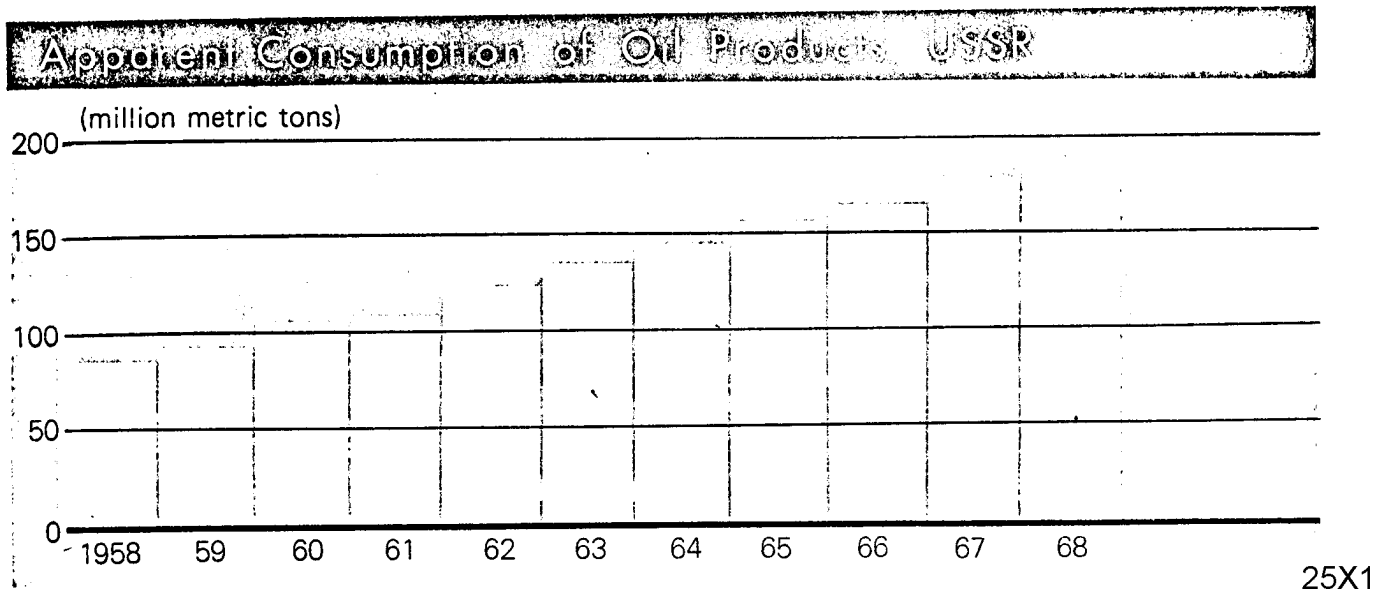
Transportation of oil continues to encounter serious problems. Prior to 1965, most oil was shipped by rail, although this mode of transport was nearly three times as expensive as movement by pipeline. Since 1965, however, pipelines have carried the greatest tonnage. At least 80 percent of the oil-pipeline network carries crude oil, and the remainder oil products. The oil fields of Azerbaydzhan and the Urals-Volga region, on which the Soviets have depended so heavily, are sufficiently distant from major centers of population and oil consumption to pose significant transport problems. The newly important oil fields of Central Asia and West Siberia are even less accessible.

Oil refining, like oil extraction, is technologically backward in the Soviet Union and lags far behind the American industry in the quality of individual products, in product mix, in the depth of refining, and in the sophistication of refining processes. This backwardness has resulted chiefly from failure to allocate sufficient investment to refining during a period of rapid growth and transition to lower quality crude oils. In part, however, the lag in product mix is attributable to the pattern of demand, which is influenced by the small number of automobiles in the Soviet Union. The demand for high-octane gasoline now has begun to rise, but facilities for producing it are not keeping pace. Expansion of existing refineries and construction of new ones consistently have fallen short of plans. Nevertheless, primary refining capacity has increased at an average rate of about eight percent a year since 1958 and now is second only to that of the US. It is sufficient to meet the needs of domestic consumers and to provide over 25 million tons of products for export.

Consumption

Soviet oil consumption has increased greatly since 1950, but only recently has it approached

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the growth rate achieved by production. During the decade from 1958-68, consumption of oil products rose at an average annual rate of about 8.4 percent. Despite the existence of an over-all surplus of oil, sporadic local shortages of certain oil products nevertheless have occurred because of failure to turn out the needed range and quality of products and because of inadequacies in the transportation and distribution systems.

With production outstripping domestic consumption in past years, an increasing portion of Soviet oil production was exported. Exports of oil and oil products increased about 17 percent per year over the decade from 1958 through 1968. Since 1966, however, the growth of exports has slowed appreciably, and exports to free world countries have leveled off. Even so, exports of oil and oil products remain the USSR's biggest single earner of hard currency. Last year such exports brought in some \$340 million. Moreover, the Soviet Union serves as the principal supplier of oil to Eastern Europe.

Domestic Prospects Through 1980s

The USSR has abundant potential resources of petroleum, both on and offshore, that could enable it to become the world's leading producer of petroleum by the end of this century. It is estimated that, as of 1 January 1969, the Soviets had proved reserves of crude oil of 3.0 to 3.4 billion tons, or about 10 to 11 times the amount produced annually. This situation is analogous to that of the United States, where proved reserves were estimated at 4.2 billion tons in 1969, giving a ratio of reserves to production of about 10:1.

To tap their reserves successfully, the Soviets must overcome difficult obstacles, of which one of the most serious is permafrost. Some 30 to 40 percent of Soviet reserves lie under permafrost, and Soviet technicians have yet to prove that they can operate successfully in such conditions.

Plans call for crude production to rise from 350 million tons in 1970 to 450 million in 1975,

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a goal that implies an average annual growth rate of 5.2 percent. This rate, which is well below the 7.6-percent rate posted during the five year period now ending, seems attainable.

Achievement of the 1980 plan target for crude output of 550-600 million tons now seems unlikely. An anticipated decline in production in some of the older regions, more difficult climatic and geological conditions in new producing areas, rising exploration and development costs, and a shortage of equipment embodying modern technology—especially for drilling—suggest that production in 1980 probably will be in the vicinity of 500 million metric tons. This estimate implies that production will increase by only 2.1 percent per year during the last five years of the decade.

Because future production depends in part upon current drilling rates, it is significant that total drilling for exploration and development of petroleum resources declined after 1967. Given both the Soviets' inexperience with the sophisticated techniques that are becoming more necessary and the more difficult drilling conditions anticipated in the 1970s, it is doubtful that average annual drilling rates will increase very much. Shashin has indicated that production goals must be achieved by technical progress and without any such steep rise in capital investment for drilling as has occurred in recent years. Some improvement, however, is possible. The priority assigned to the petroleum industry as a leading earner of foreign exchange makes it likely that Soviet planners will make an effort to provide the resources required to solve problems that already have been recognized by Soviet technicians.

Prospects for the three regions that will be the USSR's principal sources of oil in the present decade are mixed at best. In the Urals-Volga region, blunders have cut prospects for 1980 production by some two thirds. It now seems that production in this region will decline from 207 million metric tons this year to about 180 million in 1975 and 100 million in 1980. Production from Central Asia is expected to rise more slowly

than planned but to reach 60 million tons in 1975 and 65 million in 1980. West Siberia presents the greatest potential but poses the most difficult problems. Production in this area may increase from 30 million metric tons this year to 100-120 million in 1975 and 150-200 million in 1980.

Demand for petroleum products in the Soviet Union can be projected by its relationship to anticipated industrial growth. Using this method and taking into account the expected growth of the motor vehicle park, it is estimated that the USSR will consume approximately 350 million tons of oil in 1975 and 450 million tons in 1980.

Projections of both production and consumption are, of course, subject to error, and projections ten years into the future are particularly risky. Western estimates indicate that the Soviet excess of production over domestic consumption will rise from 90 million metric tons this year to about 100 million in 1975 and then decline to about 50 million in 1980. Meanwhile East European demand for foreign oil is expected to outstrip Soviet supply capability. If the Soviet Union is to maintain exports of oil to hard currency markets in this decade, the USSR and Eastern Europe will have to obtain oil from non-Communist producers. It seems likely that in 1975 the Soviets will be obtaining about 10 million metric tons of Middle Eastern and North African oil for shipment to other countries on Soviet account. Moscow probably hopes to pay for some of this oil by bartering technical assistance and equipment for producing oil. By 1980, however, the USSR may have to obtain as much as 80 million metric tons a year from non-Communist countries in order to maintain its deliveries to foreign clients. At today's prices this quantity of oil would be valued at more than \$750 million. In addition, the Eastern European countries probably will need to import some 15 million metric tons directly from the Middle East and North Africa in 1975 and perhaps 30 million in 1980. Even if the Communist countries' imports reach the indicated levels, however, the Middle East and

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Estimated Soviet Production, Demand, and Exports of Oil

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Million Metric Tons of
Crude Oil Equivalents

600

500

400

300

200

100

0
1965

1970

1975

1980

Imports from the Free World
Necessary to Maintain the
Projected Level of Exports

PRODUCTION

EXPORTS

To the Free World
To Other Communist Countries
To Eastern Europe

DOMESTIC DEMAND

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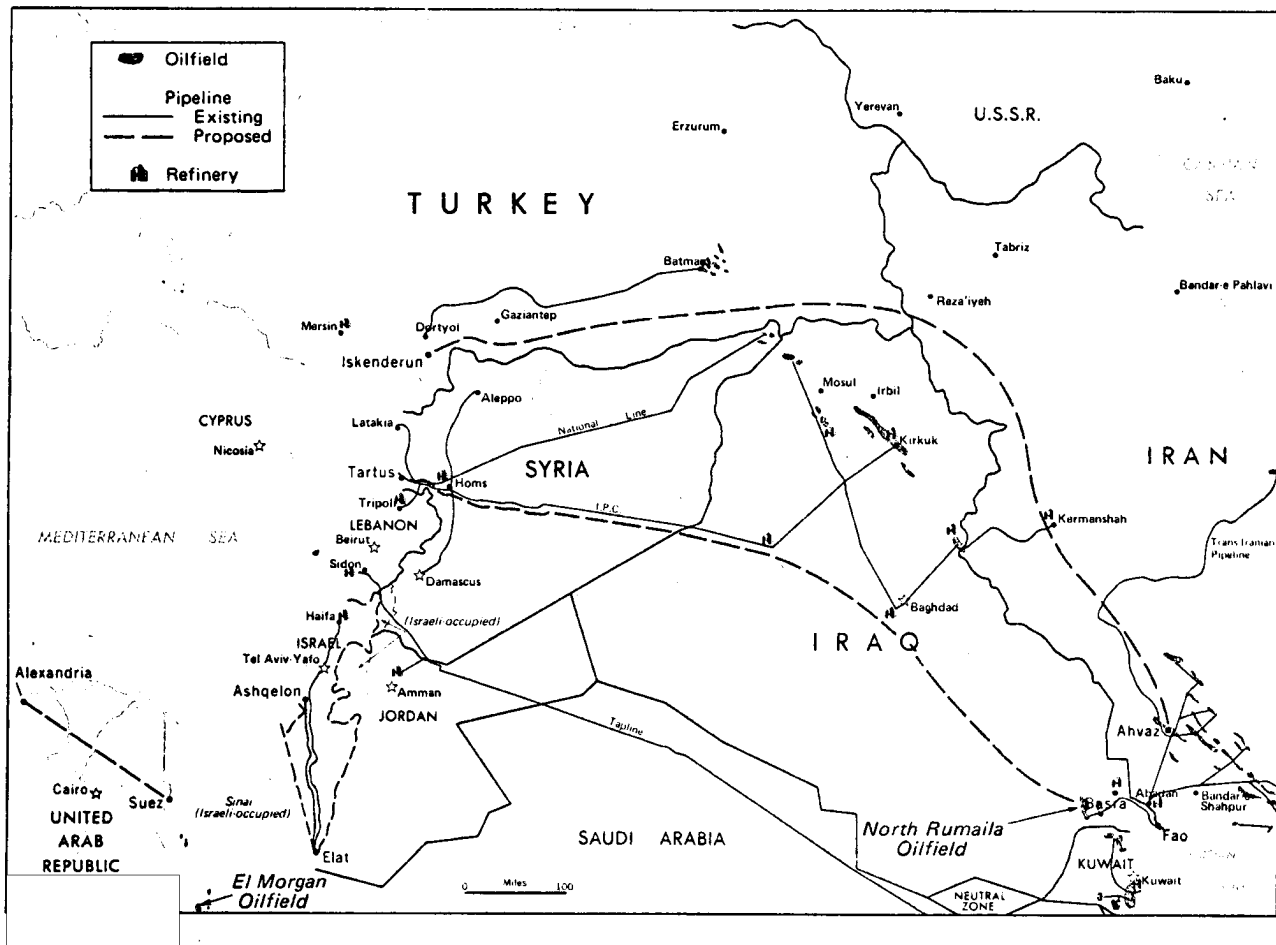
North Africa will remain dependent on free world markets for the disposal of more than 90 percent of their oil.

Soviet Interest in Middle Eastern and North African Oils

The USSR's involvement with Middle Eastern and North African oil, already in evidence for a decade, is expected to increase further in the 1970s. In the last year or two Soviet interest in such oil has increased perceptibly, and the USSR now has oil pacts with most of the major oil producing countries of the Middle East and North Africa.

The first agreement with Iraq was concluded in the early 1960s, essentially for political purposes and for its impact on Western oil interests. In 1967, however, after Baghdad had reclaimed some of its concession areas, the USSR and Iraq signed a memorandum under which the Soviets would provide technical assistance and equipment for exploration and for the extraction, transportation, and marketing of oil in exchange for crude.

An agreement signed with Baghdad in June 1969 and valued at \$72 million is repayable in hard currency. Another pact, valued at \$67 million, provides for Soviet assistance in exploiting



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the big North Rumaila field—where drilling began in September—and for the surveying of new areas, with payment to be made in crude. The Soviets also are to lay an 80-mile pipeline to the port of Fao, where they will build storage facilities. If findings in other fields in southern Iraq justify development, the Soviets "will examine the possibility of providing technical assistance in implementing" development programs there. In carrying out these agreements, the USSR has sent numerous experts to Iraq.

The USSR has been exploring for oil in Egypt and may drill as many as 40 exploratory wells in the Western Desert, where operations began in March. The Soviets are to provide ten seismic crews to bolster prospecting operations and will deliver six drilling rigs. Furthermore, if oil is found, the Soviets will provide credits for the development of the field, which will be repaid in oil.

The USSR also is expected to receive two million tons of Egyptian crude from the El Morgan field in 1970 in exchange for Soviet oil delivered to northern Egypt. As in the past, the Egyptian oil probably will be shipped to other countries on Soviet account, a practice likely to be followed as long as the Suez Canal remains closed and the Suez-Mediterranean pipeline remains to be built.

Soviet involvement in Algerian petroleum affairs began in 1964 with the establishment of the African Petroleum and Textile Institute, where an estimated 300 Soviets are on the teaching staff. About 200 Soviet oil technicians have been working in Algeria since 1967. In 1969, the USSR

contracted to receive 500,000 tons of Algerian oil annually through 1975 as part of a barter deal.

Recently the Soviets and Algerians signed several contracts, two of which covered exploration and drilling. At present six drilling rigs are operational and the USSR is to provide 15 more. The USSR will probably not receive many kudos, however; most observers describe the Soviet equipment as antiquated, perhaps as much as 20 years behind Western equipment. The rigs are usable only for shallow drilling and would be unsuitable for exploitation of major Algerian fields.

Soviet exploration in Syria, which has been going on for more than ten years, helped Damascus to begin commercial production early in 1968. The Soviets also provided technical aid for construction of a 400-mile pipeline linking the fields in northeastern Syria with the Mediterranean port of Tartus. In late 1969 Soviet specialists prepared a comprehensive plan for oil production, and agreed to aid in the establishment of a research laboratory for Syria's proposed oil institute.

Six months after seizing power in 1969, the new Libyan government took several steps, including negotiation for Soviet participation in Libyan oil affairs, to reduce its dependence upon Western companies. The Soviets have proposed a joint exploration venture with the newly organized Libyan National Oil Company and last May sent a delegation of petroleum experts to Libya to conduct a one-month study. At that time they also agreed to supply three Soviet technicians to the Libyan Ministry of Petroleum to perform a long-term survey of oil reserves. [redacted]

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